

REMARKS

Claims 1-2, 4-17 and 20-22 are pending in this application. For purposes of expedition, claim 1 has been amended to provide proper antecedent basis for a term defined. Base claims 1 and 20 are believed to be patentably distinguishable over the cited prior art, including newly cited, Kobayashi, U.S. Patent No. 5,517,481; Yumiba: Takashi et al., U.S. Patent No. 5,144,686; and Raz, U.S. Patent No. 6,639,537.

Turning now to the substance of the Office Action, claims 1-2 and 4-17 have been rejected under 35 U.S.C. §112, 2d ¶, as being indefinite for reasons stated on page 2. In response thereto, base claim 1 has been amended to overcome the rejection.

Claims 1-2, 16-17 and 20-22 have been rejected under 35 U.S.C. §103(a) as being unpatentable over newly cited art, Kobayashi, U.S. Patent No. 5,517,481 in view of Yumabi: Takashi et al., U.S. Patent No. 5,144,686 for reasons stated on pages 2-5 of the Office Action. In support of the rejection of base claims 1 and 20, the Examiner asserts that Kobayashi '481 discloses all aspects of base claims 1 and 20, except for "to nonlinearly convert the input signal based on a result of comparing an absolute value of the input signal and a predetermined critical value" which is allegedly disclosed in FIG. 2, element 7, col. 4, lines 45-63; col. 7, lines 65-67; col. 8, lines 65-67 and col. 10, lines 30-40 of Yamabi '886.

However, the Examiner has completely ignored and failed to address not only how the "nonlinearly converted signal" is generated, that is, based on a result of comparing an absolute value of the input signal and a predetermined critical value" as defined in base claims 1 and 20 to advantageously improve the modulation and enhance data reproduction from an optical recording medium, but also the specific of which the nonlinearly converted signal is being output. For example, base claims 1 and 20 define, among other features, that,

"wherein a difference between the absolute value of the input signal and the predetermined critical value is output as the nonlinearly converted signal when the absolute value of the input signal is larger than the predetermined critical value and the input signal is greater than zero (0),

wherein a summation of the absolute value of the input signal and the predetermined critical value is output as the nonlinearly converted signal when the absolute value of the input signal is larger than the predetermined critical value and the input signal is less than zero (0), and

wherein zero(0) is output as the nonlinearly converted signal when the

absolute value of the input signal is not greater than the predetermined critical value."

In fact, no where in either Kobayashi '481 or Yumabi '686, whether taken in combination or individually, and the Examiner has not addressed, is there any disclosure of the specific conditions of which the nonlinearly converted signal is being output, as defined in Applicants' base claims 1 and 20.

As the Examiner can appreciate, the rejection based on obviousness grounds cannot be sustained by mere conclusory statements; instead there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness" (*In re Kann*, 441, F3d. 977, 988 (CA Fed. 2006) cited with approval in *KSR*).

As a primary reference, Kobayashi '481 discloses a completely different invention, an optical recording/reproducing apparatus wherein data is recorded by stepwise shifting the edge position of each pit on an optical recording medium. There is no disclosure of any technique used to control high quality reproduction of a signal recorded on an optical recording medium.

As a secondary reference, Yumiba '686 does not remedy the noted deficiencies of Kobayashi '481 in order to arrive at Applicants' base claims 1 and 20. This is because Yumiba '686 discloses a picture processing apparatus dealing with MTF (modulation transfer function) of lenses or sensors used for capturing an image.

In view of these reasons and the deficiencies of the Examiner's proposed combination, Applicants respectfully request that the rejection of base claims 1 and 20 and their respective dependents be withdrawn.

With respect to dependent claims 2 and 19, and dependent claims 3 and 20, the Examiner asserts that somehow Kobayashi '481 and Yumiba '686 disclose a specific type of nonlinear filter used, that is, the input [digital] signal is saturated when the absolute value of the input [digital] signal is larger than the predetermined critical value, and the input [digital] signal is output as the nonlinearly converted signal when the absolute value of the input [digital] signal is smaller than the predetermined critical value, and that the first signal processor outputs "a difference of the absolute value of the input signal and the critical value when the absolute value of the input signal is bigger than the critical value and outputs zero when the absolute value of the input signal is smaller than the critical value". The Examiner cites the Abstract, col. 4, lines

45-63; col. 7, lines 65-67 and col. 8, lines 65-67 and col. 10, lines 30-40 of Yumabi '686 to support this assertion. However, the Examiner's assertion is misplaced and is incorrect for the following reasons.

First, Yumiba '686 discloses a MTF compensation apparatus for use in a picture processing machine. While a non-linear conversion means 7, as shown in FIG. 2, is described, such a non-linear conversion means 7 is not used to convert the input signal based on a result of comparing an absolute value of the input signal and a predetermined critical value, as defined in Applicants' base claims 1 and 20. As a result, there is **no** disclosure from Yumiba '686 of any nonlinear function based on two different types of nonlinear filters used, that is, when "a" is zero (0), as shown in FIGs. 6A-6B, or when "a" is one (1), as shown in FIGs. 6C-6D, as defined in Applicants' claims 2 and 19 and Applicants' claims 3 and 20.

There is simply **no** basis in fact for the Examiner to allege that Kobayashi '481 and Yumiba '686 disclose features of Applicants' claims 2 and 19 and Applicants' claims 3 and 20.

Similarly, with respect to claims 21 and 22, the Examiner also asserts that Kobayashi '481 and Yumiba '686 disclose the nonlinear function according to the equation as defined. However, for reasons discussed above, there is **no** disclosure from Kobayashi '481 and Yumiba '686 of any nonlinear function based on the specific equation as defined in Applicants' claims 21 and 22.

Lastly, claims 4-15 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Kobayashi, U.S. Patent No. 5,517,481 in view of Yumiba: Takashi et al., U.S. Patent No. 5,144,686 and further in view of Raz, U.S. Patent No. 6,639,537 for reasons stated on pages 6-7 of the Office Action. Since this rejection is predicated upon the correctness of the rejection of Applicants' base claims, Applicants respectfully traverse these rejections primarily based on the same reasons discussed against the rejection of their base claim 1.

Moreover, claim 7 defines a specific arrangement of a first signal processor, as shown, for example, in FIG. 4, including: at least one finite impulse response (FIR) filter arranged to change frequency characteristics of the input signal; and a nonlinear filter arranged to generate the nonlinearly converted signal based on the absolute value of the input signal and the predetermined critical value. Even if Raz '537 discloses what the Examiner alleges, which Applicants do not believe, the incorporation of Raz '537 into Kobayashi '481 and Yumiba '686 still does not arrive at Applicants' claim 7, and can only destroy the intended purposes of Kobayashi

'481, which is to record data while the edge position of each pit on a recording medium is stepwise shifted from a predetermined reference position.

Separately, claim 8 alternatively defines a specific arrangement of a first signal processor, as shown in FIG. 9, including: first and second finite impulse response (FIR) filters arranged in series to change frequency characteristics of the input signal; and a nonlinear filter disposed between the first and second FIR filters, to generate the nonlinearly converted signal based on the absolute value of the input signal and the predetermined critical value. Again, even if Raz '537 discloses what the Examiner alleges, which Applicants do not believe, the incorporation of Raz '537 into Kobayashi '481 and Yumiba '686 does not arrive at Applicants' claim 8, and can only destroy the intended purposes of Kobayashi '481, which is to record data while the edge position of each pit on a recording medium is stepwise shifted from a predetermined reference position.

Claim 11 alternatively defines a specific arrangement of a first signal processor, as shown in FIG. 10, including: a nonlinear filter to generate the nonlinearly converted signal based on the absolute value of the input signal and the predetermined critical value; and finite impulse response (FIR) filters arranged in front, behind and in parallel with the nonlinear filter respectively, to change frequency characteristics of the input signal. Again, even if Raz '537 discloses what the Examiner alleges, which Applicants do not believe, the incorporation of Raz '537 into Kobayashi '481 and Yumiba '686 does not arrive at Applicants' claim 11, and can only destroy the intended purposes of Kobayashi '481, which is to record data while the edge position of each pit on a recording medium is stepwise shifted from a predetermined reference position.

Claim 12 defines another specific arrangement of a first signal processor, as shown in FIG. 11, including: a nonlinear filter to generate the nonlinearly converted signal based on the absolute value of the input signal and the predetermined critical value; and finite impulse response (FIR) filters arranged behind and in parallel with the nonlinear filter respectively, to change frequency characteristics of the input signal. Again, even if Raz '537 discloses what the Examiner alleges, which Applicants do not believe, the incorporation of Raz '537 into Kobayashi '481 and Yumiba '686 does not arrive at Applicants' claim 12, and can only destroy the intended purposes of Kobayashi '481.

Claim 13 defines yet another specific arrangement of a first signal processor, as shown in FIG. 13, including: a nonlinear filter to generate the nonlinearly converted signal based on the absolute value of the input signal and the predetermined critical value; first and second finite impulse response (FIR) filters arranged in series behind with the nonlinear filter; and a third FIR

filter arranged in parallel with the nonlinear filter, wherein the first, second and third FIR filters are configured to change frequency characteristics of the input signal. Again, even if Raz '537 discloses what the Examiner alleges, which Applicants do not believe, the incorporation of Raz '537 into Kobayashi '481 and Yumiba '686 does not arrive at Applicants' claim 13, and can only destroy the intended purposes of Kobayashi '481.

In view of the foregoing amendments, arguments and remarks, all claims are deemed to be allowable and this application is believed to be in condition to be passed to issue. Should any questions remain unresolved, the Examiner is requested to telephone Applicants' attorney at the Washington DC office at (202) 216-9505 ext. 232.

To the extent necessary, Applicants petition for an extension of time under 37 CFR §1.136. If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 503333.

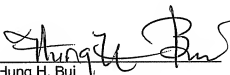
Respectfully submitted,

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